

CLAIMS

1. A method for separating and purifying a nucleic acid, which comprises:

(1) adsorbing the nucleic acid to a nucleic acid adsorbing porous membrane by passing a sample solution containing the nucleic acid through the nucleic acid adsorbing porous membrane;

(2) washing the nucleic acid adsorbing porous membrane by passing a washing solution through the nucleic acid adsorbing porous membrane, while the nucleic acid is adsorbed to the nucleic acid adsorbing porous membrane; and

(3) desorbing the nucleic acid from the nucleic acid adsorbing porous membrane by passing a recovering solution through the nucleic acid adsorbing porous membrane,

wherein the nucleic acid adsorbing porous membrane is a porous membrane that has a contact angle of 60° or less after 17 m seconds of contact of the porous membrane with 3 µl of water dropped to the porous membrane.

2. The method for separating and purifying a nucleic acid according to claim 1,

wherein the porous membrane has a contact angle of 50° or less.

3. The method for separating and purifying a nucleic acid according to claim 1 or 2,

wherein the nucleic acid adsorbing porous membrane is a porous membrane comprising an organic polymer to which the nucleic acid is adsorbed by a weak interaction involving substantially no ionic bond.

4. The method for separating and purifying a nucleic acid according to any of claims 1 to 3,

wherein the nucleic acid adsorbing porous membrane is a porous membrane comprising an organic polymer having a hydroxyl group.

5. The method for separating and purifying a nucleic acid according to any of claims 1 to 4,

wherein the nucleic acid adsorbing porous membrane is a porous membrane obtained by saponification of a mixture of acetyl celluloses different from each other in acetyl value.

6. The method for separating and purifying a nucleic acid according to any of claims 1 to 5,

wherein the nucleic acid adsorbing porous membrane has a front surface and a back surface asymmetrical with

each other.

7. The method for separating and purifying a nucleic acid according to claim 6,

the nucleic acid adsorbing porous membrane has a larger average pore size on the front surface than an average pore size on the back surface.

8. The method for separating and purifying a nucleic acid according to any of claims 1 to 7,

wherein the sample solution containing a nucleic acid is a solution where a water-soluble organic solvent is added to a solution obtained by treating a cell or virus-containing analyte with a nucleic acid solubilizing reagent.

9. The method for separating and purifying a nucleic acid according to claim 8,

wherein the nucleic acid solubilizing reagent is a solution containing at least one of a chaotropic salt, a surface active agent, a proteolytic enzyme, an antifoaming agent and a reducing agent.

10. The method for separating and purifying a nucleic acid according to claim 8 or 9,

wherein the water-soluble organic solvent is at least one alcohol selected from methanol, ethanol, propanol and an isomer thereof, and butanol and an isomer thereof.

11. The method for separating and purifying a nucleic acid according to any of claims 1 to 10,

wherein the washing solution is a solution containing at least one of methanol, ethanol, propanol and an isomer thereof, and butanol and an isomer thereof in a total amount of 20 to 100% by weight.

12. The method for separating and purifying a nucleic acid according to any of claims 1 to 11,

wherein the recovering solution is a solution having a salt concentration of 0.5 M or less.

13. The method for separating and purifying a nucleic acid according to any of claims 1 to 12, which uses a cartridge for separation and purification of nucleic acid,

wherein the cartridge for separation and purification of nucleic acid comprises:

a container having at least two openings; and  
a nucleic acid adsorbing porous membrane being

received in the container.

14. The method for separating and purifying a nucleic acid according to any of claims 1 to 13, wherein the sample solution containing a nucleic acid, the washing solution or the recovering solution is passed through the nucleic acid adsorbing porous membrane by using a pressure difference producing device.

15. A device for carrying out a method for separating and purifying a nucleic acid according to any of claims 1 to 14.

16. A reagent kit for carrying out a method for separating and purifying a nucleic acid according to any of claims 1 to 14.